

IN THE CLAIMS:

In line 1, delete ~~Patent claims:~~ and insert:

C L A I M S

What is claimed is:

Please amend claims 1-7 to read as follows:

1. (Currently Amended) ~~Mass~~ In a mass spectrometer for analysis of secondary ions and post-ionized neutral secondary particles ~~with~~ comprising (a) an ion source to create a primary ion beam to irradiate a sample and create secondary particles, said source possessing a heatable ion emitter that is coated in the area exposed to the field with a liquid-metal layer that contains an ionizable metal that is emitted and ionized as the primary ion beam, ~~whereby~~ wherein the primary ion beam contains metal ions with various stages of ionization and cluster statuses, and ~~with~~ (b) a spectrometer unit for mass analysis of the secondary particles, ~~characterized in that~~ the improvement wherein the liquid metal layer is essentially comprised of pure metallic Bismuth or of a low-melting-point alloy containing, in essence, Bismuth, ~~whereby~~ wherein a Bismuth ion mixed beam

can be emitted by the ion emitter under the influence of an electric field and from which Bismuth ion mixed beam one of a number of Bismuth ion types, whose mass is a multiple of monatomic singly or multiply charged Bismuth ions Bi_1^{p+} , is to be filtered out using a filtering device in the form of a mass-pure ion beam that is solely comprised of ions of a type Bi_n^{p+} , in which $n \geq 2$ and $p \geq 1$, and n and p are each a natural number.

2. (Currently Amended) Mass spectrometer as in Claim 1, ~~characterized in that~~ wherein the ions filtered out for a mass-pure ion beam belong to one of the following types: Bi_2^+ , Bi_3^+ , Bi_3^{2+} , Bi_4^+ , Bi_5^+ , Bi_6^+ , Bi_5^{2+} , or Bi_7^{2+} .

3. (Currently Amended) Mass spectrometer as in Claim 1, wherein ~~or 2, characterized in that~~ the secondary ion mass spectrometer may be operated as a flight-time secondary-ion mass spectrometer.

4. (Currently Amended) Mass spectrometer as in ~~one of the previous claims, characterized in that~~ Claim 1, wherein the emission current of the primary-ion beam during operation be is between 10^{-8} and 5×10^{-5} A.

5. (Currently Amended) Mass spectrometer as in ~~one of the previous claims, characterized in that~~ Claim 1, wherein a metallic alloy of Bismuth and one or more of the following metals, comprises Bismuth and a metal selected from the group consisting of Ni, Ag, Pb, Hg, Cu, Sn, or and Zn, whereby an alloy is preferably selected whose melting point lies below that of pure Bismuth.

6. (Currently Amended) ~~In~~ In an ion source to create a primary ion beam to irradiate a sample, and to create secondary particles for a mass spectrometer for analysis of secondary ions and post-ionized neutral secondary particles, said source possessing a heatable ion emitter that is coated in the area exposed to the field with a liquid-metal layer that contains an ionizable metal that is emitted and ionized as the primary ion beam, ~~whereby~~ wherein the primary ion beam contains metal ions with various stages of ionization and cluster statuses, ~~and with a spectrometer unit for mass analysis of the secondary particles, characterized in that~~ the improvement wherein the liquid metal layer is essentially comprised of pure metallic Bismuth or of a low-melting-point alloy containing Bismuth, ~~whereby~~ wherein a Bismuth ion mixed beam can be emitted by the ion emitter

under the influence of an electric field, from which Bismuth ion mixed beam one of a number of Bismuth ion types, whose mass is a multiple of monatomic singly or multiply charged bismuth ions Bi_1^{p+} , is to be filtered out using a filtering device in the form of a mass-pure ion beam that is solely comprised of ions of a type Bi_n^{p+} , in which $n \geq 2$ and $p \geq 1$, and n and p are each a natural number.

7. (Currently Amended) Ion source as in Claim 6, ~~characterized in that a~~ wherein the metallic alloy of Bismuth is coated with one or more metals selected from the group consisting of ~~with one or more of the following metals~~ ~~is selected as a liquid metal coating:~~ Ni, Ag, Pb, Hg, Cu, Sn, or Zn, whereby and wherein an alloy is preferably selected whose melting point lies below that of pure Bismuth.